


Entrez Protein



☐ 1: S39358 **cyclin kinase inhibitor - human (fragments)** BLink, PubMed, Related Sequences, Taxonomy

```
LOCUS       S39358          47 aa                    PRI       17-MAR-1999
DEFINITION  cyclin kinase inhibitor - human (fragments).
ACCESSION   S39358
PID         g481783
VERSION     S39358  GI:481783
DBSOURCE    pir: locus S39358;
            summary: #length 47 #checksum 7286;
            PIR dates: 25-Feb-1994 #sequence_revision 17-Nov-1995 #text_change
            17-Mar-1999;
            punctuation in sequence.
KEYWORDS    .
SOURCE      human.
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 47)
  AUTHORS   Xiong,Y., Hannon,G.J., Zhang,H., Casso,D., Kobayashi,R. and
            Beach,D.
  TITLE     p21 is a universal inhibitor of cyclin kinases
  JOURNAL   Nature 366 (6456), 701-704 (1993)
  MEDLINE   94081955
FEATURES             Location/Qualifiers
     source          1..47
                     /organism="Homo sapiens"
                     /db_xref="taxon:9606"
     Protein         1..47
                     /product="cyclin kinase inhibitor"
ORIGIN
        1 lylptgprrg rdelglvprs geqaegsprq tsmtdfyhsk rrlifsk
//
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1: *Nature* 1993 Dec 16;366(6456):701-4

Related Articles, Books, Protein, Nucleotide

PubMed Services

Related Resources

# p21 is a universal inhibitor of cyclin kinases.

**Xiong Y, Hannon GJ, Zhang H, Casso D, Kobayashi R, Beach D**

Howard Hughes Medical Institute, Cold Spring Harbor Laboratory, New York 11724.

Deregulation of cell proliferation is a hallmark of neoplastic transformation. Alteration in growth control pathways must translate into changes in the cell-cycle regulatory machinery, but the mechanism by which this occurs is largely unknown. Compared with normal human fibroblasts, cells transformed with a variety of viral oncoproteins show striking changes in the subunit composition of the cyclin-dependent kinases (CDKs). In normal cells, CDKs exist predominantly in multiple quaternary complexes, each containing a CDK, cyclin, proliferating cell nuclear antigen and the p21 protein. However, in many transformed cells, proliferating cell nuclear antigen and p21 are lost from these multiprotein enzymes. Here we have investigated the significance of this phenomenon by molecular cloning of p21 and in vitro reconstitution of the quaternary cell-cycle kinase complexes. We find that p21 inhibits the activity of each member of the cyclin/CDK family. Furthermore, overexpression of p21 inhibits the proliferation of mammalian cells. Our results indicate that p21 may be a universal inhibitor of cyclin kinases.

Comment in:

- Nature. 1993 Dec 16;366(6456):634

MeSH Terms:

- Amino Acid Sequence
- Animal
- Base Sequence
- Cell Cycle*
- Cell Division
- Cell Line
- Cloning, Molecular
- Cyclins/metabolism*

- Cyclins/isolation & purification
- Cyclins/genetics
- DNA
- Mice
- Molecular Sequence Data
- Moths
- Protein Kinases/antagonists & inhibitors*
- Protein p53/metabolism
- RNA, Messenger/analysis
- Recombinant Proteins/metabolism
- Recombinant Proteins/isolation & purification
- Recombinant Proteins/genetics
- Support, Non-U.S. Gov't
- Support, U.S. Gov't, P.H.S.

Substances:

- Protein Kinases
- p34PSK-J3 kinase
- DNA
- Recombinant Proteins
- RNA, Messenger
- Protein p53
- Cyclins
- Cip1 protein

PMID: 8259214

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RESULT 1
S39358
cyclin kinase inhibitor - human (fragments)
C;Species: Homo sapiens (man)
C;Date: 25-Feb-1994 #sequence_revision 17-Nov-1995 #text_change 17-Mar-1999
C;Accession: S39358
R;Xiong, Y.; Hannon, G.J.; Zhang, H.; Casso, D.; Kobayashi, R.; Beach, D.
Nature 366, 701-704, 1993
A;Title: p21 is a universal inhibitor of cyclin kinases.
A;Reference number: S39357; MUID:94081955
A;Accession: S39358
A;Status: preliminary
A;Molecule type: protein
A;Residues: 1-47 <XIO>

Query Match 100.0%; Score 38; DB 2; Length 47;
Best Local Similarity 100.0%; Pred. No. 0.062;
Matches 8; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 KRRLIFSK 8
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Db 40 KRRLIFSK 47

RESULT 2
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cyclin-dependent kinase inhibitor - human
N;Alternate names: probable DNA synthesis inhibitor
C;Species: Homo sapiens (man)
C;Date: 26-Jul-1996 #sequence_revision 26-Jul-1996 #text_change 08-Oct-1999
C;Accession: A49437; I53412; S39357
R;Harper, J.W.; Adami, G.R.; Wei, N.; Keyomarsi, K.; Elledge, S.J.
Cell 75, 805-816, 1993
A;Title: The p21 Cdk-interacting protein Cip1 is a potent inhibitor of G1 cyclin-
dependent kinases.
A;Reference number: A49437; MUID:94061996
A;Accession: A49437
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-164 <RES>
A;Cross-references: GB:L25610; NID:g425142; PIDN:AAA16109.1; PID:g425143
R;Noda, A.; Ning, Y.; Venable, S.F.; Pereira-Smith, O.M.; Smith, J.R.
Exp. Cell Res. 211, 90-98, 1994
A;Title: Cloning of senescent cell-derived inhibitors of DNA synthesis using an
expression screen.
A;Reference number: I53412; MUID:94170884
A;Accession: I53412
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-164 <RE2>
A;Cross-references: GB:L26165; NID:g418017; PIDN:AAA19811.1; PID:g433742
R;Xiong, Y.; Hannon, G.J.; Zhang, H.; Casso, D.; Kobayashi, R.; Beach, D.
Nature 366, 701-704, 1993
A;Title: p21 is a universal inhibitor of cyclin kinases.
A;Reference number: S39357; MUID:94081955
A;Accession: S39357
A;Status: preliminary
A;Molecule type: mRNA
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A;Cross-references: GB:S67388; NID:g453134; PIDN:AAB29246.1; PID:g453135

Query Match 100.0%; Score 38; DB 2; Length 164;
Best Local Similarity 100.0%; Pred. No. 0.21;
Matches 8; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 KRRLIFSK 8
||||||||
Db 154 KRRLIFSK 161

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RESULT   3
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cyclin-dependent kinase - human (fragment)
C;Species: Homo sapiens (man)
C;Date: 02-Jul-1996 #sequence_revision 02-Jul-1996 #text_change 21-Jul-2000
C;Accession: I54380
R;Mousses, S.; Ozcelik, H.; Lee, P.D.; Malkin, D.; Bull, S.B.; Andrulis, I.L.
Hum. Mol. Genet. 4, 1089-1092, 1995
A;Title: Two variants of the CIP1/WAF1 gene occur together and are associated with human
cancer.
A;Reference number: I54380; MUID:95384154
A;Accession: I54380
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-181 <RES>
A;Cross-references: GB:L47232; NID:g984723; PIDN:AAB59559.1; PID:g984724
C;Genetics:
A;Gene: CIP1/WAF1


  Query Match             100.0%;  Score 38;  DB 2;  Length 181;
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Qy      1 KRRLIFSK 8
          ||||||||
Db    171 KRRLIFSK 178


RESULT   4
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C;Species: Homo sapiens (man)
C;Date: 04-Oct-1996 #sequence_revision 04-Oct-1996 #text_change 21-Jul-2000
C;Accession: I68674
R;Mousses, S.; Ozcelik, H.; Lee, P.D.; Malkin, D.; Bull, S.B.; Andrulis, I.L.
Hum. Mol. Genet. 4, 1089-1092, 1995
A;Title: Two variants of the CIP1/WAF1 gene occur together and are associated with human
cancer.
A;Reference number: I54380; MUID:95384154
A;Accession: I68674
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-181 <RES>
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C;Genetics:
A;Gene: CIP1/WAF1


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Qy      1 KRRLIFSK 8
          ||||||||
Db    171 KRRLIFSK 178



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CDN1_FELCA
ID   CDN1_FELCA     STANDARD;      PRT;   164 AA.
AC   O19002;
DT   15-DEC-1998 (Rel. 37, Created)
DT   15-DEC-1998 (Rel. 37, Last sequence update)
DT   15-DEC-1998 (Rel. 37, Last annotation update)
DE   CYCLIN-DEPENDENT KINASE INHIBITOR 1 (P21) (CDK-INTERACTING PROTEIN 1).
GN   CDKN1A OR CIP1 OR WAF1.
OS   Felis silvestris catus (Cat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
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OC   Mammalia; Eutheria; Carnivora; Fissipedia; Felidae; Felis.
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RP   SEQUENCE FROM N.A.
RC   TISSUE=LYMPH NODE;
RX   MEDLINE=98036042; PubMed=9370275;
RA   Okuda M., Minehata K., Setoguchi A., Cho K.-W., Nakamura N.,
RA   Nishigaki K., Watari T., Cevario S., O'Brien S.J., Tsujimoto H.,
RA   Hasegawa A.;
RT   "Cloning and chromosome mapping of the feline genes p21WAF1 and
RT   p27Kip1.";
RL   Gene 198:141-147(1997).
CC   -!- FUNCTION: MAY BE THE IMPORTANT INTERMEDIATE BY WHICH P53 MEDIATES
CC       ITS ROLE AS AN INHIBITOR OF CELLULAR PROLIFERATION IN RESPONSE TO
CC       DNA DAMAGE. MAY BIND TO AND INHIBIT CYCLIN-DEPENDENT KINASE
CC       ACTIVITY, PREVENTING PHOSPHORYLATION OF CRITICAL CYCLIN-DEPENDENT
CC       KINASE SUBSTRATES AND BLOCKING CELL CYCLE PROGRESSION (BY
CC       SIMILARITY).
CC   -!- SUBCELLULAR LOCATION: NUCLEAR.
CC   -!- SIMILARITY: THE N-TERMINAL OF CIP1 AND KIP ARE SIMILAR.
CC   ----------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
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CC   use by non-profit institutions as long as its content is in no way
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CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; D84650; BAA23168.1; -.
KW   Cell cycle; Nuclear protein; Zinc-finger.
FT   ZN_FING      13     41       C4-TYPE (POTENTIAL).
FT   DOMAIN      141    156       NUCLEAR LOCALIZATION SIGNAL (POTENTIAL).
SQ   SEQUENCE   164 AA;  18315 MW;  0F7912A76C78BF38 CRC64;


  Query Match             100.0%;  Score 38;  DB 1;  Length 164;
  Best Local Similarity   100.0%;  Pred. No. 0.087;
  Matches    8;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 KRRLIFSK 8
          ||||||||
Db    154 KRRLIFSK 161


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ID   CDN1_HUMAN     STANDARD;      PRT;   164 AA.
AC   P38936;
DT   01-FEB-1995 (Rel. 31, Created)
DT   01-FEB-1995 (Rel. 31, Last sequence update)
DT   15-DEC-1998 (Rel. 37, Last annotation update)
DE   CYCLIN-DEPENDENT KINASE INHIBITOR 1 (MELANOMA DIFFERENTIATION
DE   ASSOCIATED PROTEIN 6) (MDA-6) (P21) (CDK-INTERACTING PROTEIN 1).
GN   CDKN1A OR CDKN1 OR CIP1 OR WAF1 OR MDA6 OR SDI1 OR PIC1 OR CAP20.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=94061996; PubMed=8242751;
RA   Harper J.W., Adami G.R., Wei N., Keyomarsi K., Elledge S.J.;
RT   "The p21 Cdk-interacting protein Cip1 is a potent inhibitor of G1
RT   cyclin-dependent kinases.";
RL   Cell 75:805-816(1993).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=94061997; PubMed=8242752;
RA   El-Deiry W.S., Tokino T., Velculescu V.E., Levy D.B., Parsons R.,
RA   Trent J.M., Lin D., Mercer W.E., Kinzler K.W., Vogelstein B.;
RT   "WAF1, a potential mediator of p53 tumor suppression.";
RL   Cell 75:817-825(1993).
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RN   [3]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=94081955; PubMed=8259214;
RA   Xiong Y., Hannon G.J., Zhang H., Casso D., Kobayashi R., Beach D.;
RT   "p21 is a universal inhibitor of cyclin kinases.";
RL   Nature 366:701-704(1993).
RN   [4]
RP   SEQUENCE FROM N.A.
RA   Jiang H., Fisher P.B.;
RT   "Use of a sensitive and efficient subtraction hybridization protocol
RT   for the identification of genes differentially regulated during the
RT   induction of differentiation in human melanoma cells.";
RL   Mol. Cell. Differ. 1:285-299(1993).
RN   [5]
RP   SEQUENCE FROM N.A.
RA   Jiang H., Lin J., Herlyn M., Kerbel R.S., Weissman B.E.,
RA   Welch D.R., Fisher P.B.;
RL   Submitted (MAY-1994) to the EMBL/GenBank/DDBJ databases.
RN   [6]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=94170884; PubMed=8125163;
RA   Noda A., Ning Y., Venable S.F., Pereira-Smith O.M., Smith J.R.;
RT   "Cloning of senescent cell-derived inhibitors of DNA synthesis using
RT   an expression screen.";
RL   Exp. Cell Res. 211:90-98(1994).
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RX   MEDLINE=95384154; PubMed=7655464;
RA   Mousses S., Oezcelik H., Lee P.D., Malkin D., Bull S.B.,
RA   Andrulis I.L.;
RT   "Two variants of the CIP1/WAF1 gene occur together and are associated
RT   with human cancer.";
RL   Hum. Mol. Genet. 4:1089-1092(1995).
RN   [8]
RP   SEQUENCE FROM N.A.
RA   Palmer S.;
RL   Submitted (JUL-1997) to the EMBL/GenBank/DDBJ databases.
RN   [9]
RP   X-RAY CRYSTALLOGRAPHY (2.6 ANGSTROMS) OF 139-160.
RX   MEDLINE=97015085; PubMed=8861913;
RA   Gulbis J.M., Kelman Z., Hurwitz J., O'Donnell M., Kuriyan J.;
RT   "Structure of the C-terminal region of p21(WAF1/CIP1) complexed with
RT   human PCNA.";
RL   Cell 87:297-306(1996).
CC   -!- FUNCTION: MAY BE THE IMPORTANT INTERMEDIATE BY WHICH P53 MEDIATES
CC       ITS ROLE AS AN INHIBITOR OF CELLULAR PROLIFERATION IN RESPONSE TO
CC       DNA DAMAGE. MAY BIND TO AND INHIBIT CYCLIN-DEPENDENT KINASE
CC       ACTIVITY, PREVENTING PHOSPHORYLATION OF CRITICAL CYCLIN-DEPENDENT
CC       KINASE SUBSTRATES AND BLOCKING CELL CYCLE PROGRESSION.
CC   -!- SUBCELLULAR LOCATION: NUCLEAR.
CC   -!- TISSUE SPECIFICITY: IS EXPRESSED IN ALL ADULT HUMAN TISSUES,
CC       WITH 5-FOLD LOWER LEVELS OBSERVED IN THE BRAIN.
CC   -!- INDUCTION: BY THE P53 TUMOR SUPPRESSOR/ONCOGENE. ALSO BY MEZEREIN
CC       (ANTILEUKEMIC COMPOUND) AND BY IFN-BETA.
CC   -!- SIMILARITY: THE N-TERMINAL OF CIP1 AND KIP ARE SIMILAR.
CC   ----------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
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CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; L25610; AAA16109.1; -.
DR   EMBL; S67388; AAB29246.1; -.
DR   EMBL; U09579; AAA85641.1; -.
DR   EMBL; U03106; AAC04313.1; -.
DR   EMBL; L26165; AAA19811.1; -.
DR   EMBL; L47233; AAB59560.1; ALT_INIT.
DR   EMBL; Z85996; CAB06656.1; -.
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DR   PIR; S39357; S39357.
DR   SWISS-2DPAGE; P38936; HUMAN.
DR   MIM; 116899; -.
KW   Cell cycle; Nuclear protein; Zinc-finger.
FT   ZN_FING      13     41       C4-TYPE (POTENTIAL).
FT   DOMAIN      141    156       NUCLEAR LOCALIZATION SIGNAL (POTENTIAL).
SQ   SEQUENCE   164 AA;  18119 MW;  98D1E7C519ADFCA9 CRC64;


  Query Match             100.0%;  Score 38;  DB 1;  Length 164;
  Best Local Similarity   100.0%;  Pred. No. 0.087;
  Matches    8;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       1 KRRLIFSK 8
           ||||||||
Db     154 KRRLIFSK 161

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ID   Q14010      PRELIMINARY;      PRT;   181 AA.
AC   Q14010;
DT   01-NOV-1996 (TrEMBLrel. 01, Created)
DT   01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT   01-OCT-2000 (TrEMBLrel. 15, Last annotation update)
DE   CYCLIN-DEPENDENT KINASE (FRAGMENT).
GN   CIP1/WAF1.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=TUMOR;
RX   MEDLINE=95384154; PubMed=7655464;
RA   Mousses S., Oezcelik H., Lee P.D., Malkin D., Bull S.B.,
RA   Andrulis I.L.;
RT   "Two variants of the CIP1/WAF1 gene occur together and are associated
RT   with human cancer.";
RL   Hum. Mol. Genet. 4:1089-1092(1995).
DR   EMBL; L47232; AAB59559.1; -.
DR   HSSP; P46527; 1JSU.
DR   INTERPRO; IPR003175; -.
DR   PFAM; PF02234; CDI; 1.
FT   NON_TER       1      1
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Qy       1 KRRLIFSK 8
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Db     171 KRRLIFSK 178
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RESULT   1
US-07-970-462A-2
; Sequence 2, Application US/07970462A
; Patent No. 5302706
;  GENERAL INFORMATION:
;    APPLICANT:  SMITH, JAMES R.
;    TITLE OF INVENTION:  SENESCENT CELL DERIVED INHIBITORS OF
;    TITLE OF INVENTION:  DNA SYNTHESIS
;    NUMBER OF SEQUENCES:  2
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  HOWREY & SIMON
;      STREET:  1299 PENNSYLVANIA AVE., N.W.
;      CITY:  WASHINGTON
;      STATE:  D.C.
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/07/970,462A
;      FILING DATE:
;      CLASSIFICATION:  536
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 07/808,523
;      FILING DATE:  16-DEC-1991
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  AUERBACH, JEFFREY I.
;      REGISTRATION NUMBER:  32,680
;      REFERENCE/DOCKET NUMBER:  225-102-CIP
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (202) 383-7451
;      TELEFAX:  (202) 383-6610
;  INFORMATION FOR SEQ ID NO:  2:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  164 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
;    HYPOTHETICAL:  NO
;    ANTI-SENSE:  NO
;    ORIGINAL SOURCE:
;      ORGANISM:  HOMO SAPIENS
;      STRAIN:  SDI-1
;    IMMEDIATE SOURCE:
;      LIBRARY:  Senescent cell derived cDNA library
US-07-970-462A-2


  Query Match             100.0%;  Score 38;  DB 1;  Length 164;
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  Matches    8;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       1 KRRLIFSK 8
            ||||||||
Db     154 KRRLIFSK 161


RESULT   2
US-08-154-915-6
; Sequence 6, Application US/08154915
; Patent No. 5618669
;  GENERAL INFORMATION:
;    APPLICANT:  Beach, David
;    APPLICANT:  Xiong, Yue
;    TITLE OF INVENTION:  Cyclin Complex Rearrangement and Uses
;    TITLE OF INVENTION:  Related Thereto
;    NUMBER OF SEQUENCES:  6
;    CORRESPONDENCE ADDRESS:
```

```
;       ADDRESSEE:  LAHIVE & COCKFIELD
;       STREET:  60 State Street
;       CITY:  Boston
;       STATE:  MA
;       COUNTRY:  USA
;       ZIP:  02109
;     COMPUTER READABLE FORM:
;       MEDIUM TYPE:  Floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  ASCII(text)
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/08/154,915
;       FILING DATE:  19-NOV-1993
;       CLASSIFICATION:  435
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 07/991,997
;       FILING DATE:  17-DEC-1993
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 07/963,308
;       FILING DATE:  16-OCT-1993
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 07/888,178
;       FILING DATE:  26-MAY-1993
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 07/701,514
;       FILING DATE:  16-MAY-1993
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  Vincent, Matthew P.
;       REGISTRATION NUMBER:  36,709
;       REFERENCE/DOCKET NUMBER:  MII-026
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  (617) 227-7400
;       TELEFAX:  (617) 227-5941
;   INFORMATION FOR SEQ ID NO:  6:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  164 amino acids
;       TYPE:  amino acid
;       TOPOLOGY:  linear
;     MOLECULE TYPE:  protein
US-08-154-915-6


  Query Match             100.0%;  Score 38;  DB 1;  Length 164;
  Best Local Similarity   100.0%;  Pred. No. 0.25;
  Matches    8;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       1 KRRLIFSK 8
            ||||||||
Db     154 KRRLIFSK 161


RESULT   3
US-08-275-983B-4
; Sequence 4, Application US/08275983B
; Patent No. 5688665
;  GENERAL INFORMATION:
;     APPLICANT:  Massague, Joan
;     APPLICANT:  Roberts, James M.
;     APPLICANT:  Koff, Andrew
;     APPLICANT:  Polyak, Kornelia
;     TITLE OF INVENTION:  Isolated p27 Protein, Nucleic Acid Molecules      Encoding Sa
;     NUMBER OF SEQUENCES:  19
;     CORRESPONDENCE ADDRESS:
;       ADDRESSEE:  LAHIVE & COCKFIELD
;       STREET:  60 State Street, suite 510
;       CITY:  Boston
;       STATE:  Massachusetts
;       COUNTRY:  USA
;       ZIP:  02109-1875
;     COMPUTER READABLE FORM:
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;       MEDIUM TYPE:  Floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  PatentIn Release #1.0, Version #1.25
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/08/275,983B
;       FILING DATE:  13-SEP-1994
;       CLASSIFICATION:  435
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 08/179,045
;       FILING DATE:  07-JAN-1994
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  Vincent, Matthew P.
;       REGISTRATION NUMBER:  36,709
;       REFERENCE/DOCKET NUMBER:  MII-079CP
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  (617)227-7400
;       TELEFAX:  (617)227-5941
;   INFORMATION FOR SEQ ID NO:  4:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  164 amino acids
;       TYPE:  amino acid
;       TOPOLOGY:  linear
;     MOLECULE TYPE:  peptide
;     FRAGMENT TYPE:  internal
US-08-275-983B-4


  Query Match             100.0%;  Score 38;  DB 1;  Length 164;
  Best Local Similarity   100.0%;  Pred. No. 0.25;
  Matches    8;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       1 KRRLIFSK 8
            ||||||||
Db     154 KRRLIFSK 161



RESULT   5
US-08-574-043A-2
; Sequence 2, Application US/08574043A
; Patent No. 5807692
;  GENERAL INFORMATION:
;     APPLICANT:  Kinzler, Kenneth W.
;     APPLICANT:  El-Deiry, Wafik
;     APPLICANT:  Vogelstein, Bert
;     TITLE OF INVENTION:  p21WAF1 Derivatives and Diagnostic
;     TITLE OF INVENTION:  Methods
;     NUMBER OF SEQUENCES:  7
;     CORRESPONDENCE ADDRESS:
;       ADDRESSEE:  Banner & Allegretti, LTD
;       STREET:  1001 G Street, NW suite 1100
;       CITY:  Washington
;       STATE:  DC
;       COUNTRY:  USA
;       ZIP:  20001
;     COMPUTER READABLE FORM:
;       MEDIUM TYPE:  Floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  PatentIn Release #1.0, Version #1.25
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/08/574,043A
;       FILING DATE:
;       CLASSIFICATION:  514
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  Kagan, Sarah A.
;       REGISTRATION NUMBER:  32,141
;       REFERENCE/DOCKET NUMBER:  01107.49698
;     TELECOMMUNICATION INFORMATION:
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;  TELEPHONE:  202.508.9100
;  TELEFAX:  202.508.9299
;  INFORMATION FOR SEQ ID NO:  2:
;  SEQUENCE CHARACTERISTICS:
;  LENGTH:  164 amino acids
;  TYPE:  amino acid
;  TOPOLOGY:  linear
;  MOLECULE TYPE:  protein
US-08-574-043A-2

Query Match 100.0%; Score 38; DB 1; Length 164;
Best Local Similarity 100.0%; Pred. No. 0.25;
Matches 8; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy       1 KRRLIFSK 8
            ||||||||
Db     154 KRRLIFSK 161
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